

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-10. (Canceled).

11. (Currently amended) A fuel pressure regulator for an internal combustion engine comprising:

a seat member having a seat opening, and a valve seat formed around the seat opening, the seat opening leading to a fuel delivery pipe through which fuel pumped out of a fuel tank is delivered to an internal combustion engine;

a valve member disposed downstream of the valve seat of said seat member in a flow direction of the fuel; and

a plate spring working to urge said valve member into abutment with the valve seat to close the seat opening of said seat member and to permit said valve member to be moved away from the valve seat to open the seat opening of said seat member when a pressure of the fuel flowing through the flow path of said seat member that is higher than a preselected limit level acts on said valve member, thereby regulating the pressure of the fuel delivered to the internal combustion engine to below the preselected limit level, said plate spring including an outer portion retained to be stationary with respect to the seat member, an inner portion that is movable with respect to the seat member, at least one annular portion retained between the outer portion and the inner portion, and an outside and an inside joint portions, the outside joint portion connecting the outer portion and the annular portion, the inside joint portion connecting the annular portion and the inner portion, the outside and inside joint portions being opposed diametrically to each other across the center of the plate spring; and

a second annular portion disposed between said annular portion and the outer portion, said second annular portion being greater in rigidity than said annular portion.

12. (Original) A fuel pressure regulator as set forth in claim 11, wherein said valve member is in abutment with the inner portion of said plate spring so as to be movable in a direction substantially perpendicular to a line extending in a thickness-wise direction of said plate spring.

Claims 13-15. (Canceled).

16. (Currently amended) A fuel pressure regulator for an internal combustion engine comprising:

a seat member having a seat opening, and a valve seat formed around the seat opening, the seat opening leading to a fuel delivery pipe through which fuel pumped out of a fuel tank is delivered to an internal combustion engine;

a valve member disposed downstream of the valve seat of said seat member in a flow direction of the fuel; and

a plate spring working to urge said valve member into abutment with the valve seat to close the seat opening of said seat member and to permit said valve member to be moved away from the valve seat to open the seat opening of said seat member when a pressure of the fuel flowing through the flow path of said seat member that is higher than a preselected limit level acts on said valve member, thereby regulating the pressure of the fuel delivered to the internal combustion engine to below the preselected limit level, said plate spring including an outer portion retained to be stationary with respect to the seat member, a center portion abutting said valve member and that is movable with respect to the seat member, and at least two spring portions retained between the outer portion and the center portion, each of the spring portions having a first end joined to the outer portion and a second end joined to the

center portion, the second ends being joined to an outer periphery of the center portion at equi-angular intervals,

wherein each of said spring portions has rigidity which increases from the second end to the first end.

17. (Original) A fuel pressure regulator as set forth in claim 16, wherein said valve member is in abutment with the center portion of said plate spring so as to be movable in a direction substantially perpendicular to a line extending in a thickness-wise direction of the center portion.

18. (Original) A fuel pressure regular as set forth in claim 16, wherein the spring portions of said plate spring are of a zigzag shape.

19. (Original) A fuel pressure regulator as set forth in claim 16, wherein the spring portions of said plate spring are of a spiral shape.

Claims 20 – 24. (Canceled)

25. (Previously presented) A fuel pressure regulator for an internal combustion engine comprising:

a seat member having a seat opening, and a valve seat formed around the seat opening, the seat opening leading to a fuel delivery pipe through which fuel pumped out of a fuel tank is delivered to an internal combustion engine;

a valve member disposed downstream of the valve seat of said seat member in a flow direction of the fuel, said valve member being adapted to abut on the valve seat to close the seat opening and to be moved upon application of pressure of the fuel thereto to open the seat opening for regulating the pressure of the fuel delivered to the internal combustion engine;

a plate spring working to urge said valve member into abutment with the valve seat to close the seat opening of said seat member, said plate spring including an outer portion retained to be stationary, an inner portion retained to be movable, at least one annular portion retained between the outer portion and the inner portion, and an outside and an inside joint portions, the outside joint portion connecting the outer portion and the annular portion, the inside joint portion connecting the annular portion and the inner portion, the outside and inside joint portions being opposed diametrically to each other across the center of the plate spring; and

a second annular portion disposed between said annular portion and the outer portion, said second annular portion being greater in rigidity than said annular portion.

26. (Previously presented) A fuel pressure regulator for an internal combustion engine comprising:

a seat member having a seat opening, and a valve seat formed around the seat opening, the seat opening leading to a fuel delivery pipe through which fuel pumped out of a fuel tank is delivered to an internal combustion engine;

a valve member disposed downstream of the valve seat of said seat member in a flow of the fuel, said valve member being adapted to abut on the valve seat to close the seat opening and to be moved upon application of pressure of the fuel thereto to open the seat opening for regulating the pressure of the fuel delivered to the internal combustion engine;

a plate spring working to urge said valve member into abutment with the valve seat to close the seat opening of said seat member, said plate spring including an outer portion retained to be stationary, a center portion abutting said valve member and retained to be movable, and at least two spring portions retained between the outer portion and the center portion, each of the spring portions having a first end joined to the outer portion and a second end joined to the center portion, the second ends being joined to an outer periphery of the center portion at equi-angular intervals; and

KONISHI
Appl. No. 10/799,639
June 18, 2007

wherein each of said spring portions has rigidity which increases from the second end to the first end.